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Comparison on Performance of Adaptive Algorithms for Eye Blinks Removal in Electroencephalogram (Conference Paper)

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Abstract

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The interference of eye blink artifacts can cause serious distortion to electroencephalogram (EEG) which could bias the signal interpretation and reduce the classification accuracy in a brain-computer interface (BCI) application. To overcome this problem, an algorithm to automatically detect and remove the artifacts from EEG signals is highly desirable. One of the methods that can be applied for automatic artifacts removal is adaptive filtering through an adaptive noise cancellation (ANC) system. In this paper, we compare the performance of three adaptive algorithms ; namely LMS, RLS, and ANFIS, in removing the eye blink from EEG signals. To evaluate the results, the SNR, MSE and correlation coefficient values are calculated based on the results obtained by using one of the widely used methods for blinks removal , independent component analysis (ICA). The results show that RLS algorithm provides the best performance when comparing with the ICA method. © 2018 IEEE.

SciVal Topic Prominence

Topic: Electroencephalography | Independent component analysis | ocular artifacts

Prominence percentile: 93.517

Author keywords

Adaptive filter | ANFIS | Electroencephalogram (EEG) | Eye blink artifacts | LMS | RLS

Indexed keywords

Engineering controlled terms: Adaptive algorithms | Adaptive filtering | Adaptive filters | Biomedical signal processing | Brain computer interface | Fuzzy inference | Independent component analysis | Signal to noise ratio

Engineering uncontrolled terms: Adaptive noise cancellations | ANFIS | Classification accuracy | Correlation coefficient | Electro-encephalogram (EEG) | Eye - blink artifacts | Independent component analyses (ICA) | Signal interpretation

Engineering main heading: Electroencephalography

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